WEBCAST: August 24, 2005

Dealing with Private Property Programs

WHAT REALLY HAPPENS

Water Environment Federation
Preserving & Enhancing the Global Water Environment

Introduction

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Speaker Bios

Ken Roley

Ken Roley is a Facilities Engineer at the City of Salem, Oregon. He manages the Environmental Services Section and a small group of engineers and technical staff that provide engineering services to the Public Works Operations which includes the sewer, water, and storm drainage divisions.

Ken has been with the City of Salem for over 12 years and has managed a number of projects related to the sanitary sewer collection system.

He holds both a Bachelor and Masters degrees in Civil Engineering from Oregon State University and is a registered professional engineer in Oregon.

Speaker Bios

Raj Bhattarai

Raj is the Manager of the Environmental and Regulatory Services Division of the Austin Water Utility, where he has worked since 1984.

Raj has a B.S. in Civil Engineering from the Indian Institute of Technology, Kanpur, India, and an M.S. in Environmental Health Engineering from the University of Texas at Austin. He is a registered professional engineer and a Diplomate of the American Academy of Environmental Engineers, and serves as the Vice President of the Water Environment Association of Texas.

He is the recipient of the Water Environment Federation's Gascoigne Medal and Bedell Award.

Speaker Bios

Lawrence C. Cox

Lawrence C. Cox is General Manager of the Downers Grove Sanitary District, a position he has held since 1979.

He is a graduate of Northern Illinois University, receiving his undergraduate degree in 1973 and a Master of Arts in Public Administration in 1986.

He has been responsible for the operation, maintenance and rehabilitation of the District wastewater collection system for over thirty years.

WEF Webcast
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What Really Happens

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Ken Roley, P.E.
Facilities Engineer
City of Salem, Oregon
Public Works Department

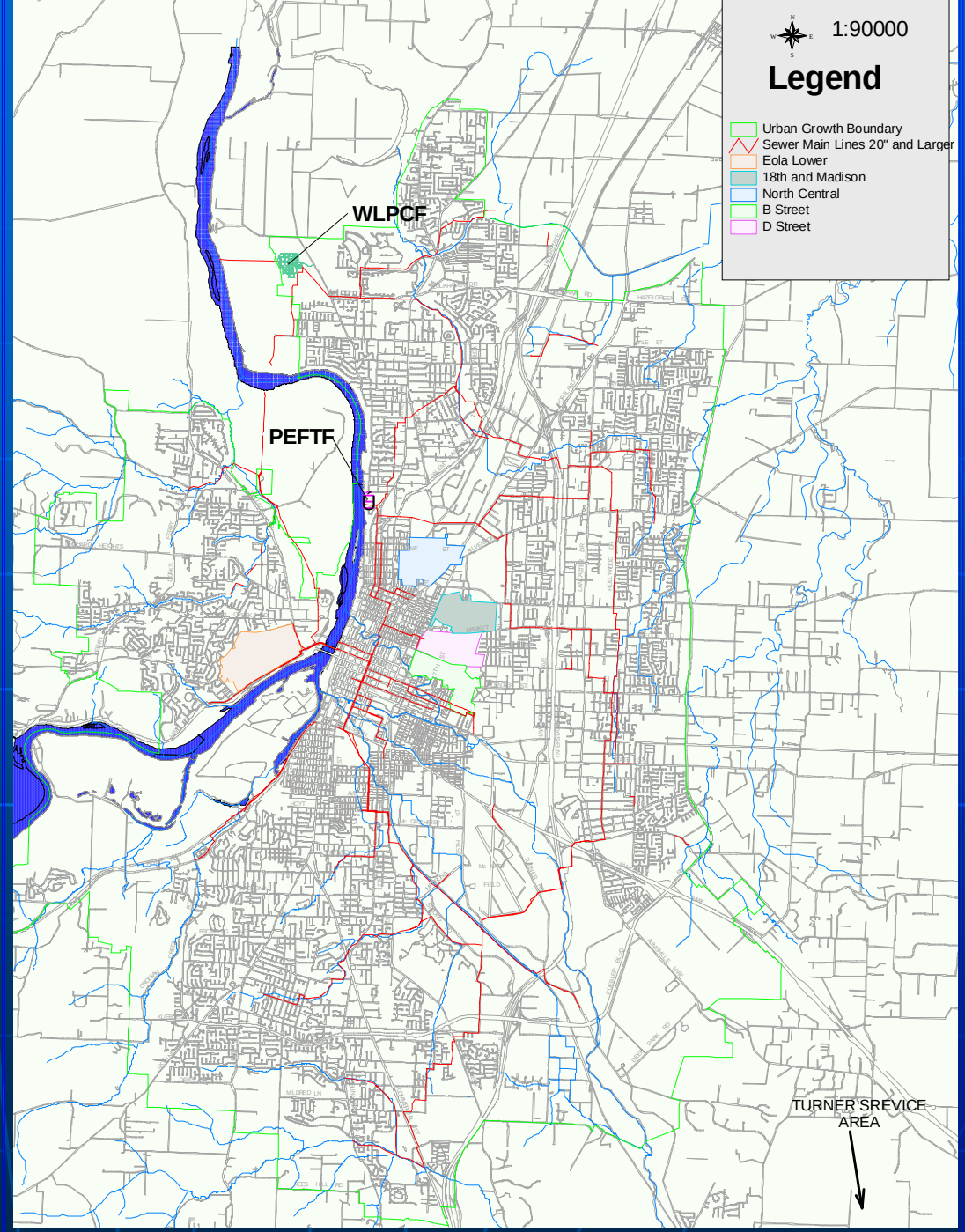
Overview

- Salem's Wastewater Treatment System
- History of I/I Removal
- Current Program
- Tracking I/I Removal and System Performance
- What we have learned

Salem's Wastewater Treatment System

- Regional Facility
- Serve 210,000 people
- 700 miles of pipes
- 6"- 75" in size
- Age- 1900's and up
- Separate sewer and storm drain systems

City of Salem Service Area



Wastewater Treatment System (Cont.)

- SSOs- 0 – 12 events/ year
- Sewer Master Plan- 1996
- Wastewater Facility Plan- 2002
- MAO with DEQ- 1998
- 5 yr- 24 hour storm by 2010
- Cost- $400 Million

I/I History- The 70's & 80's

- Smoke Testing Age
- Attack I/I at the source
- Tested entire system
- Eliminated 100s of inflow sources
- Greater focus on new services

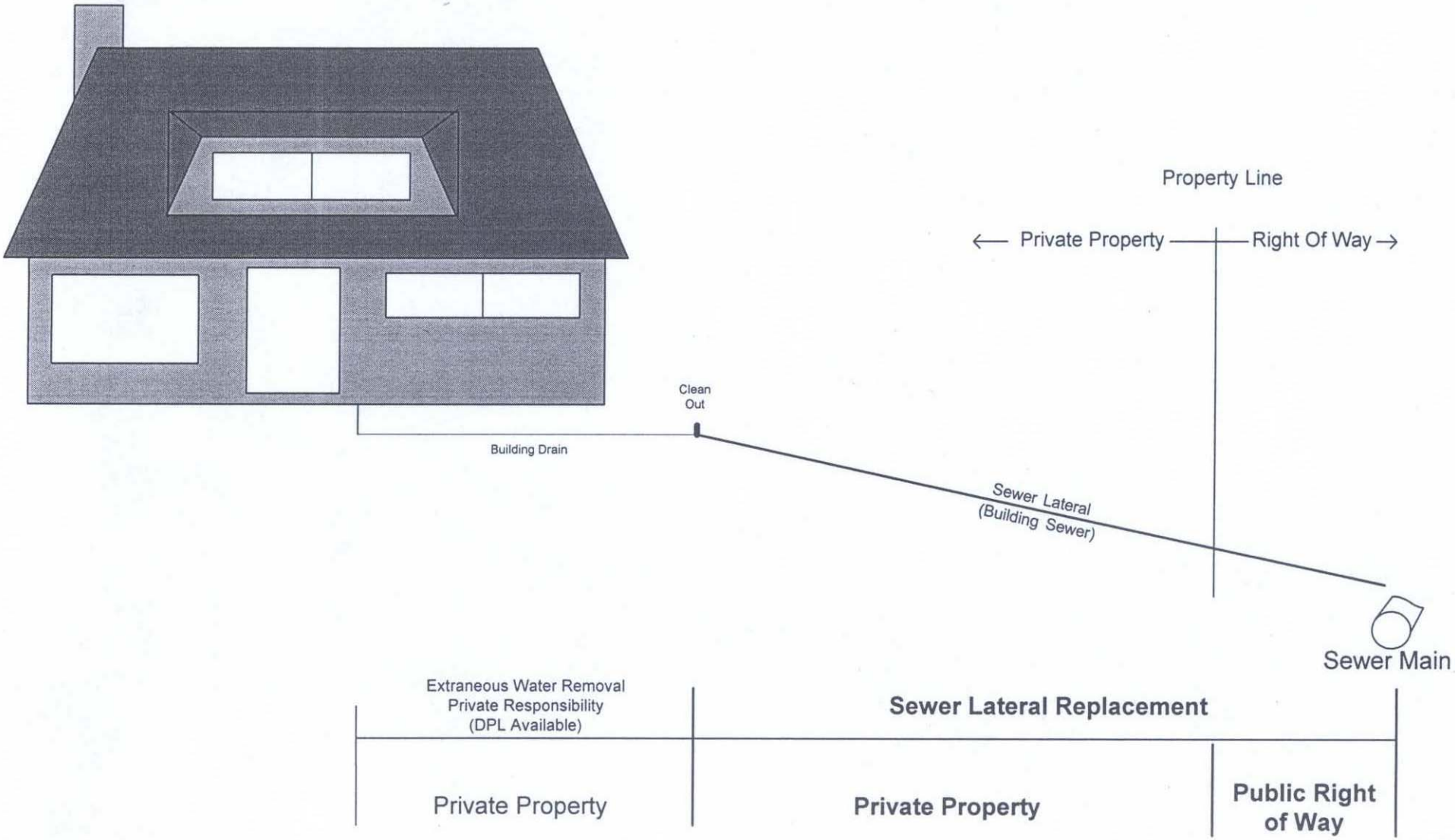
I/I History- The 90s

- Convey and Treat
- Sewer Master Plan completed- 1996
- Developed Hydraulic Model
- Eliminated sewer-storm inter ties
- Greater focus on Private property issues

Current Rehabilitation/ Replacement Program

- $3.0 - $4.5 Million/ yr.
- How Program Evolved
- Funding of service laterals by sewer utility.

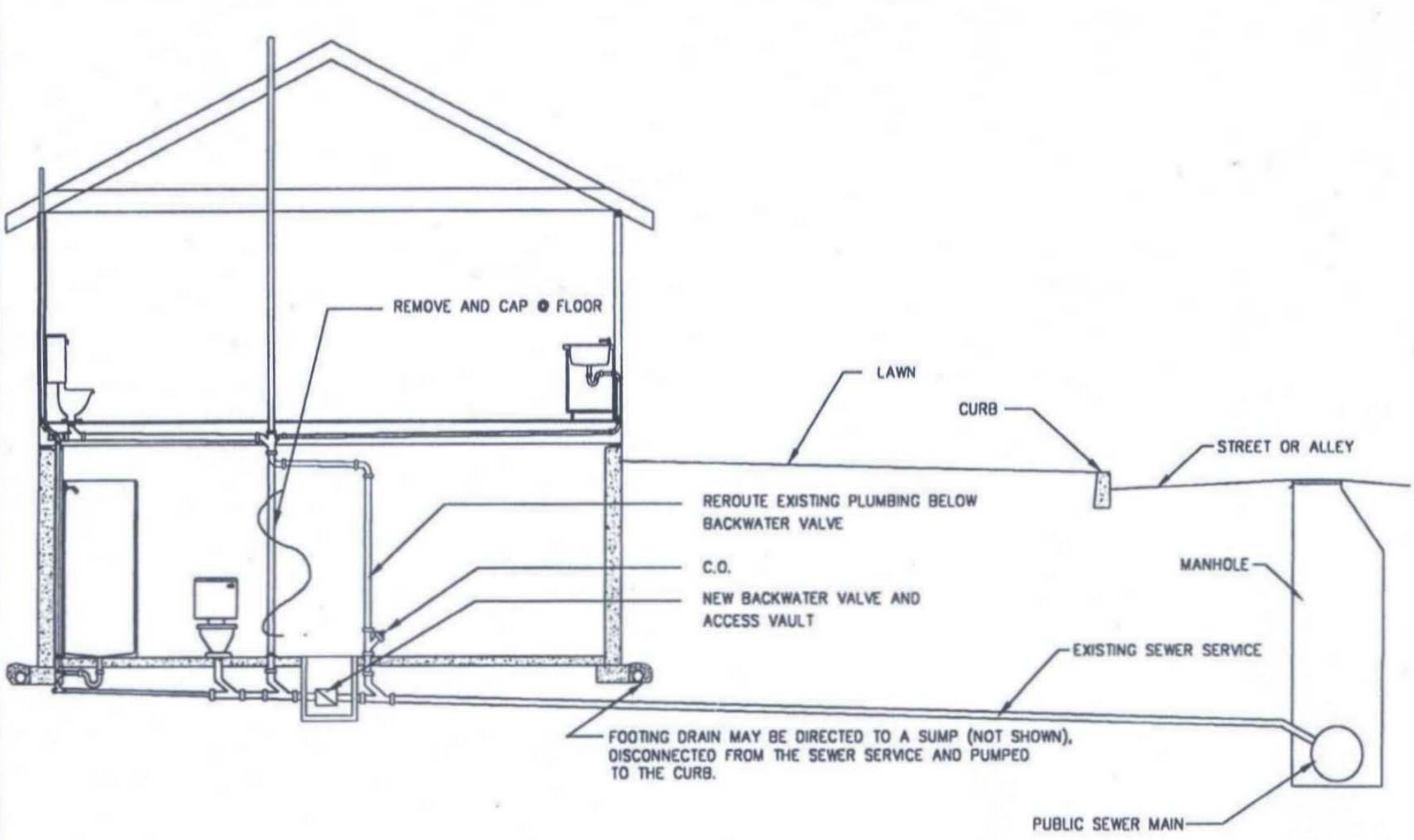
SEWER LATERAL COMPONENTS



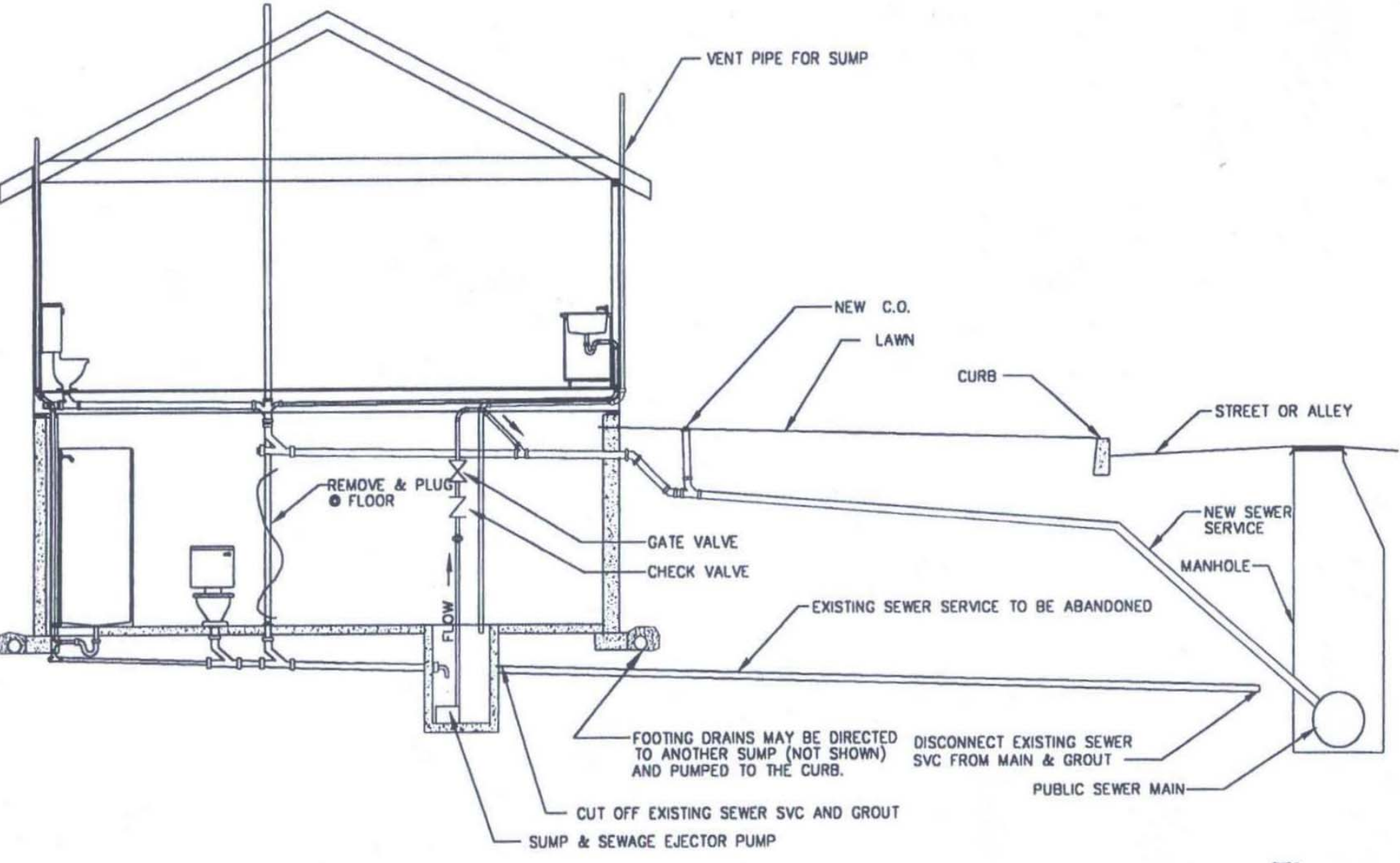
Private Property Issues

- Basement Flooding
- Positive Protection Program (PPP)
- Extraneous Water Removal
- Zero Interest, Deferred Payment Loans

Backwater Valve Retrofit



Lateral and Ejector Pump Retrofit



Positive Protection Program

- $880,000/ year
- Completed about 350 projects since 1997.
- Loans- $1.6 Million
- Ave. Cost/ home- $12,625

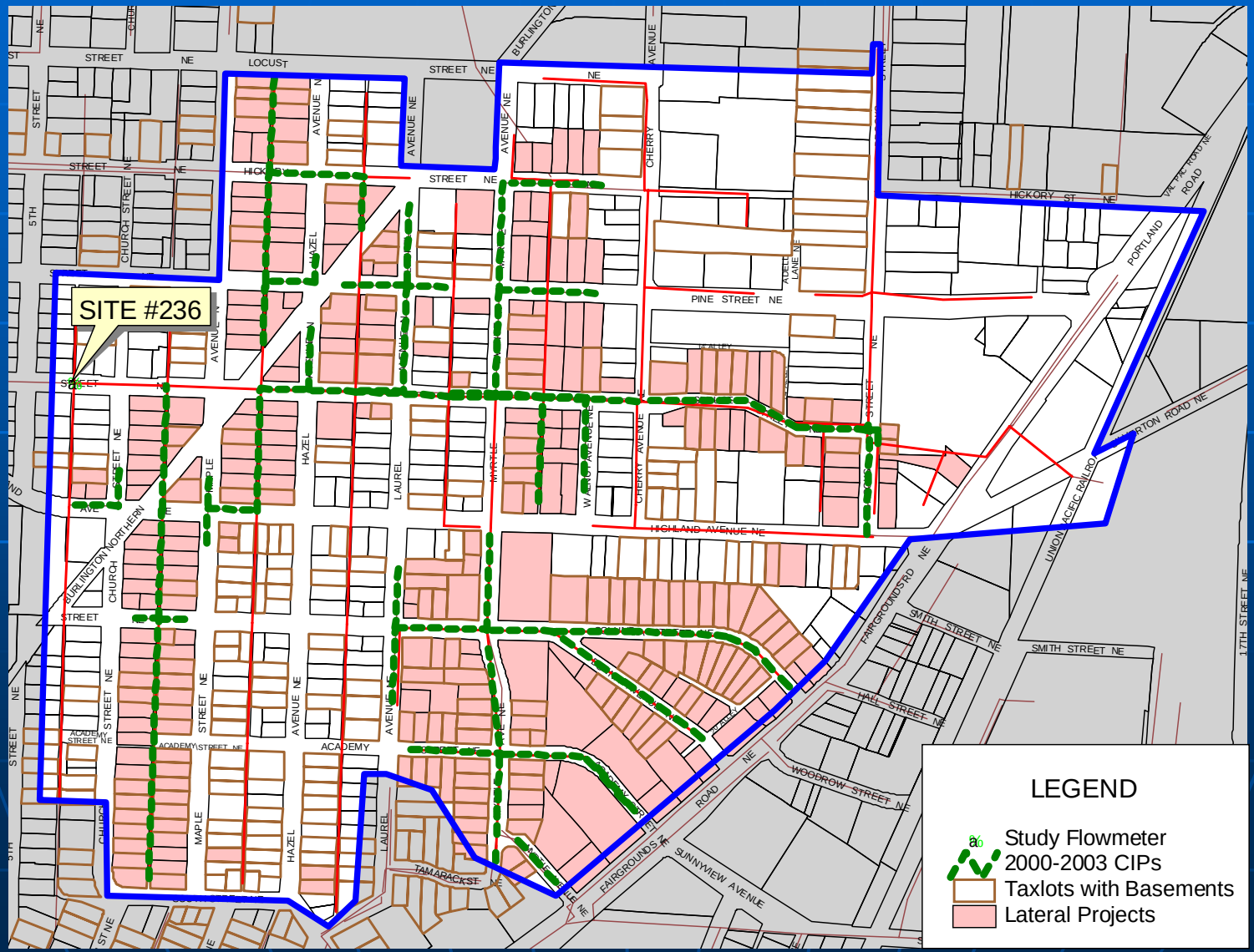
Private Property Involvement with R/R Projects

- Include Private Property in Survey
- Send Letter to all Residents
- Existing Laterals Inspected and Mapped
- Property Inspected for Sources of Extraneous Water
- City Provides Technical Assistance
- Homeowner Hires Their Own Contractor.

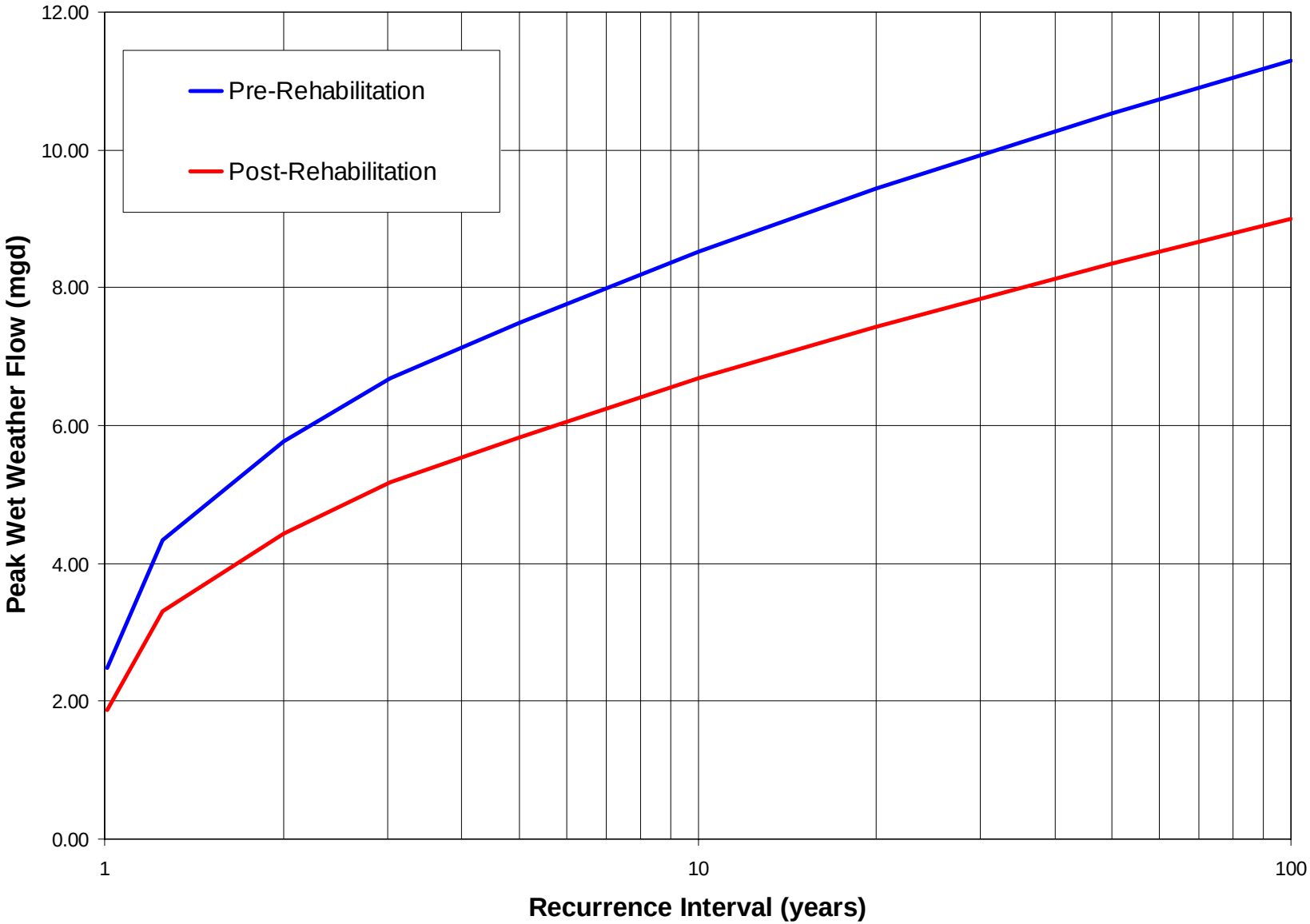
Annual Funding for Private Property Sewer Systems

TYPE OF WORK	FUNDING $
R/R Projects (Grants)	$600,000
Extraneous Water (Loans)	$440,000
Positive Protection Program (Loans-Ended in 2004)	$880,000
Retrofit Program (Grants)	$250,000
Miscellaneous Lateral Replacements (Grants/ Low Income)	$250,000
Total Spending on Private Property	$2.4 Million
Total R/R Program Spending, (Public + Private)	$4.0 Million

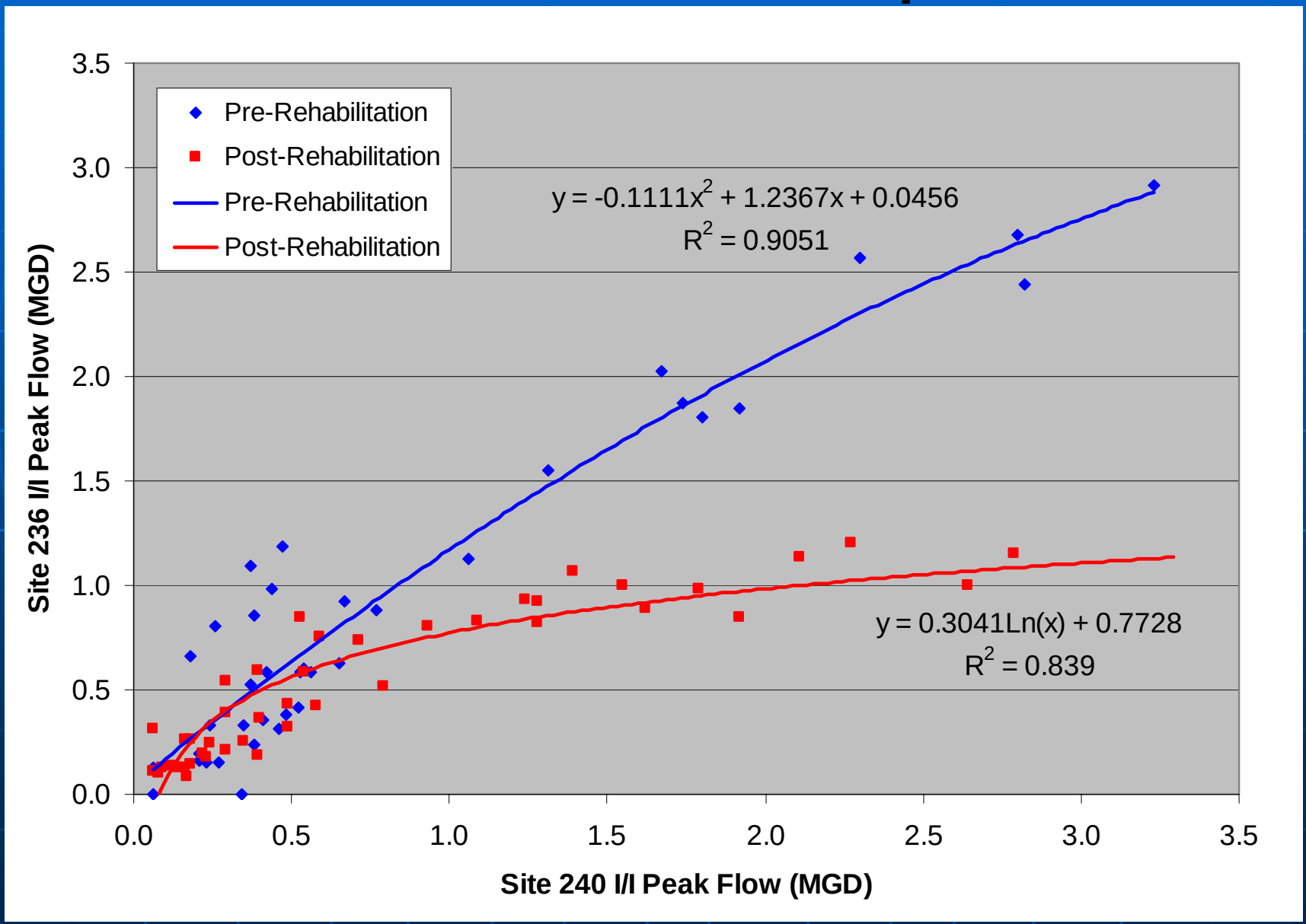
I/I Removal Estimation - Study Basin



Pre/Post Model Comparison



Pre/Post Data Comparison



Peak Hourly I/I Reductions

Recurrence Interval (yrs)	Pre-Rehab I/I Flow (MGD)	Post-Rehab I/I Flow (MGD)	Reduction	I/I Removed (GPD/IDM)
5	7.49	5.83	22%	45,000
10	8.52	6.68	22%	50,000
20	9.44	7.44	21%	54,000
50	10.53	8.35	21%	59,000
100	11.30	9.00	20%	62,000

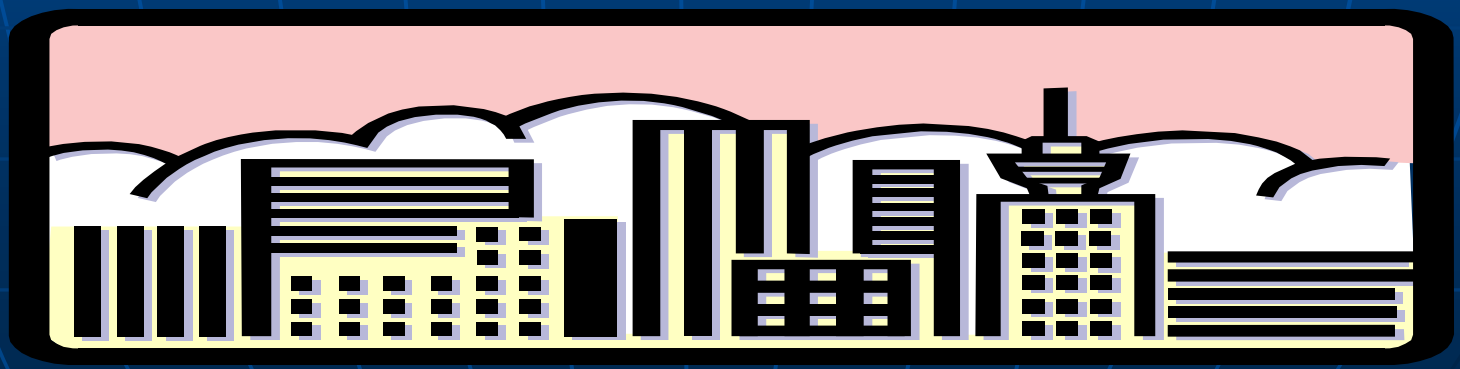
Cost Effectiveness of Projects

Recurrence Interval (yrs)	Pre-Rehab I/I Flow (MGD)	Post-Rehab I/I Flow (MGD)	Reduction (GPD)	Cost ($/GPD)[1]
5	7.49	5.83	1,660,000	1.90
10	8.52	6.68	1,840,000	1.71
20	9.44	7.44	2,000,000	1.58
50	10.53	8.35	2,180,000	1.45
100	11.30	9.00	2,300,000	1.37

[1]Note that approximately 30% of this cost is in the form of loans to the property owners.

What Have We Learned?

- In Short Term to meet Regulatory Requirements:
  - Convey and Treat- Increase Capacity
  - Build Peak Excess Flow Treatment Facility
  - Keep Fixing Holes in the System



What Have We Learned?

- Current R/R Program is Reducing I/I over Long Term.
- Private Property Side Cannot be Ignored.
- Inspection of Private Property During Design is Critical for Project Success.
- Zero Interest Deferred Payment Loan Program is a Key Driver.

For Further Information

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Questions?

Austin's Private Lateral Financing and Repair Program

WEF Webcast, August 24, 2005

Gopal Guthikonda, P.E.
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Austin Water Utility
City of Austin, Texas

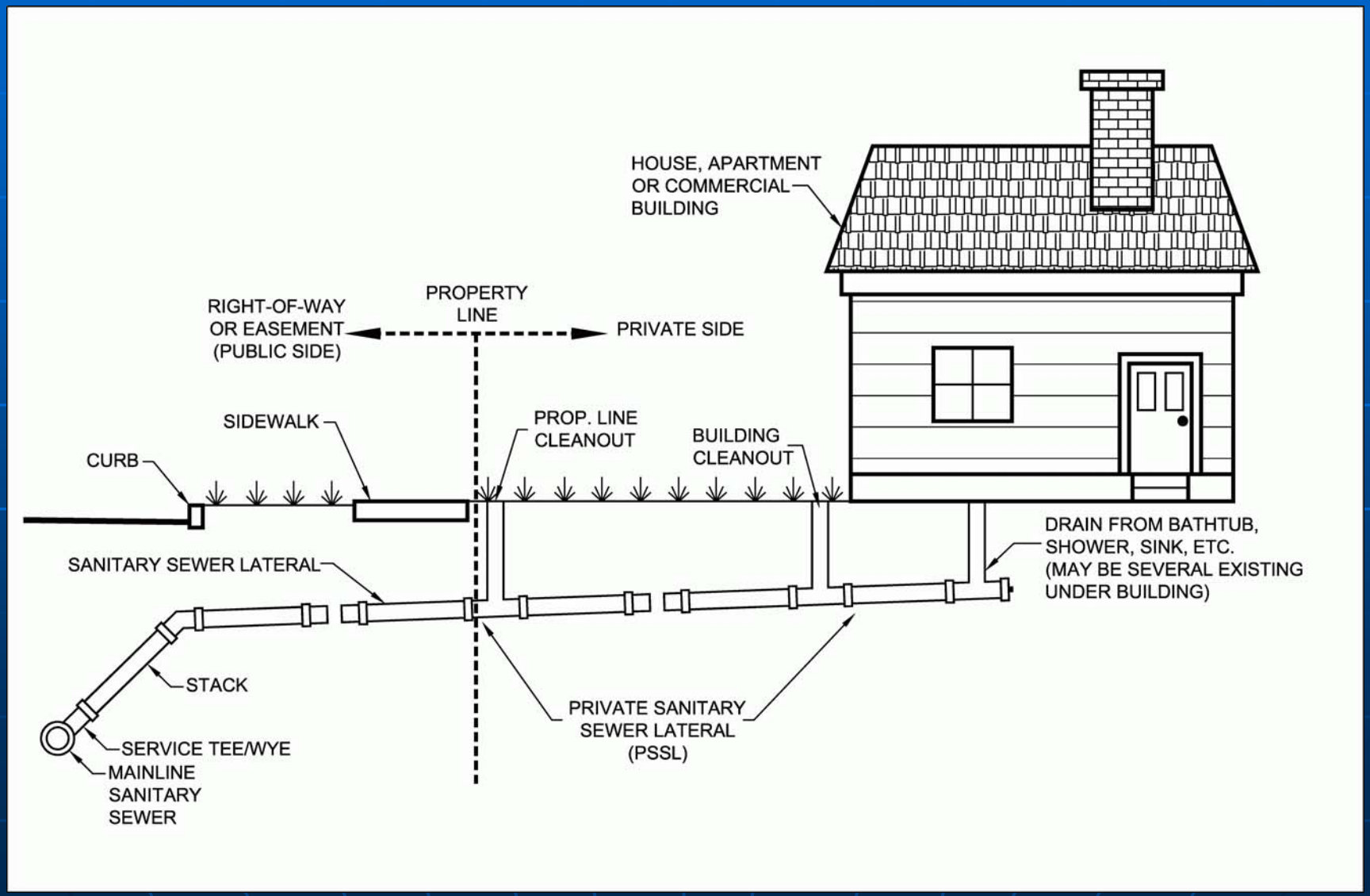
Austin WATER

acwp
Austin Clean Water Program

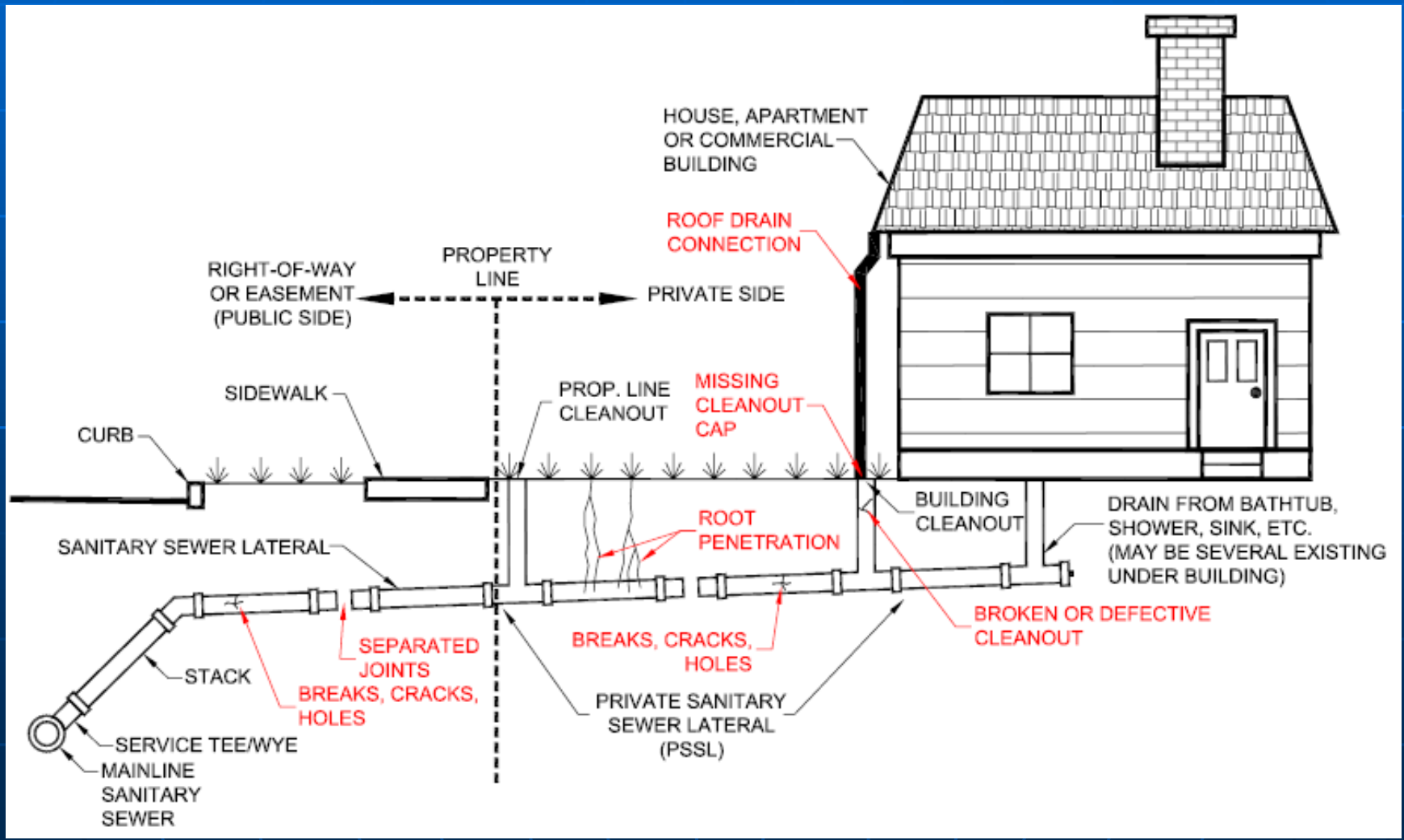
Austin, Texas

- Capital of Texas
- Deep in the heart of Texas
- ~270 sq. miles
- Estimated Population: 700,000
- Collection System: ~2,320 miles
- Service Connections: ~168,200
- System-wide Wastewater Flow: ~85 MGD

Typical Sanitary Sewer Lateral



Sanitary Sewer Lateral Problems



Why are private lateral problems a big deal?

- Contribute extraneous flows to collection system
- Can cause sanitary sewer overflows
- Negatively impact public health and the environment
- Lead to higher O&M costs for collection as well as treatment systems

EPA's Administrative Order

- Issued April 1999
- Required elimination of SSOs by December 2007
- Required 14 broad and separate tasks
- Utility took a comprehensive look at its collection system
- Inflow/Infiltration (I/I) studies
- Sewer System Evaluation Survey (SSES)

I/I and SSES Studies

- Indicated significant (~50%) extraneous flow contributions from private laterals
- Estimate ~6% or ~10,000 private laterals may need repair or replacement
- Majority of the repair/replacement costs estimated to be in the range of $1,000 - $3,000

Old Ordinance

- If defect permits excess wastewater infiltration, owner is given 60 days to repair
- Water and wastewater service could be terminated, if repair wasn't completed within 60 days of notice
- "Excess Wastewater" defined as 250 gpd/inch diameter/mile of pipe

Old Approach

- Old ordinance: finding the defect wasn't enough
- Utility had to show significant flow contribution due to defects
- Difficult for the Utility to prove its case
- Lacked enforcement teeth

New Approach

- Develop a new plan
  - Survey of other Utilities' practices
  - Public Input – Citizen Advisory Group
  - New Ordinance
  - Enforcement
  - Incentives
  - Better installation practices
  - Schedule

Citizen Advisory Group

- Diverse group of 33 members
- Geographical and interest group diversity
- Leaders and representatives from neighborhood, environmental advocacy and restaurant association
- Quarterly meetings
- Reviewed and commented on most aspects of Austin Clean Water Program

Private Laterals Task Force

- 8 volunteers from Citizen Advisory Group
- 8 Meetings in 2003 - 2004
- Presented results of December 2002 Survey (working draft) by Miami-Dade Water and Sewer Department
- Discussed variety of approaches:
  - Utility paying for all private laterals work
  - Private lateral insurance program
  - Flat charge of $1,000 for all necessary work on private laterals
  - Cutting off drinking water if customer does not complete private lateral work by a certain deadline

Private Laterals Task Force (continued…)

- Task Force favored a new ordinance
- Wanted to provide incentive to the customers
- Stronger enforcement
- After 2 years of work, consensus on a Private Lateral Financing Program
- Interest-free financing as well as Penalty for not completing work in time

Private Lateral Financing Program

- Modeled after Austin Energy's Total Home Efficiency Loans Program
- Austin Water Utility would buy down the interest for loans made by a private lender
- Request for Proposal from financial institutions
- Proposed ordinance and financial program is tentatively scheduled for City Council approval next month

Proposed Ordinance

- Owner maintenance required for private laterals
- Inspection and notice to owner of defective private lateral
- Repair or replacement standards
- Post-repair and post-replacement inspection and testing

Proposed Ordinance (continued…)

- Financing program and application
- Failure to repair is an offense
- Termination and restoration of water or wastewater service
- Criminal and Civil Penalties
- Cumulative remedies

Eligibility Requirements

- Applicant must have an active Utility account
- Applicant must own the residence requiring the lateral repair or replacement
- Property must be a detached, single-family dwelling or owner-occupied duplex (Commercial or multi-family properties ineligible)

Eligibility Requirements (continued…)

- Prior to any construction, the private lateral must have been inspected by the Austin Water Utility and deemed not to be in compliance with the Utility's requirements
- Final installation must be inspected and approved by the Utility

Eligible Cost Items

- Approved cost of repairing or replacing private lateral from property line to immediately outside the house, including necessary backfill
- Approved cost of installing necessary cleanouts to private lateral

Eligible Cost Items (continued…)

- Approved cost of removing or decommissioning old private lateral from property line to immediately outside the house
- Approved cost of any necessary permits
- Looking at options for those who don’t qualify for the loan or can’t afford to pay for the repair

Ineligible Cost Items

- Cost of repairing or replacing internal building plumbing
- Cost of installing, removing or replacing any trees or landscaping items
- Cost of installing or replacing any paving materials

Ineligible Cost Items (continued…)

- Cost of installing or replacing any surface treatments, concrete slabs or foundations, light poles, mail boxes and any similar appurtenances
- Cost of remediating hazardous materials
- Cost of decommissioning septic tanks and appurtenances

Program Terms and Conditions

- Minimum loan amount $1,000
- Maximum loan amount $3,000
- Loan proceeds must be used for eligible cost items only
- Current plans are to continue the Private Lateral Financing Program even after the conclusion of EPA's Administrative Order on June 30, 2009

For more information, please contact:

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Austin Water

acwp
Austin Clean Water Program

Questions?

Downers Grove Sanitary District Private Property I/I Removal & Lateral Repair Assistance Programs

Lawrence C. Cox
General Manager

WEF Webcast Series
Dealing with Private Property Programs – What Really Happens
August 24, 2005

Downers Grove Sanitary District Background

- Special unit of local government
- Responsible for wastewater collection and treatment
- Operates 237 miles of public sewers
- Operates 9 pumping stations
- Operates one WWTF rated at 11 MGD
- 20 square mile service area
- Western suburbs of Chicago, Illinois
- 19,600 building connections
- Serves approximately 62,000 people

Downers Grove Sanitary District I/I Problem – History

- Building Inspections
  - Began in 1973
  - Identify illegal connections (downspouts, sump pumps, etc.)
  - Every building has been inspected at least once
- SSES and Sewer Rehab in 1980s (USEPA grant)
- Continuing SSES in late 1980s and 1990s
  - Flow monitoring
  - Smoke testing
  - Flood testing

Downers Grove Sanitary District I/I Problem – History

- Continued I/I problems despite SSES efforts
  - Normal dry weather flow = 8 mgd
  - Peak wet weather flow = 80 mgd
  - Average 18 Sanitary Sewer Overflows (SSOs) per year
  - Average 37 basement backups per year due to high flows

Downers Grove Sanitary District Flow Basin I-J-16 Pilot Rehab project

- February 1994 to May 1997
- Install CIPP (liner) in 5,316 LF of sewer
- Grout and install liner in 16 manholes
- Install CIPP in 69 of 85 services from main to property line
- Total Cost = $419,193
- No reduction in I/I – New direction needed

Downers Grove Sanitary District Current Sewer Rehabilitation Policy

- DGSD and Baxter & Woodman, Inc. implement new flow monitoring program
  - Program started in September 1996
  - Divide District into 151 flow meter basins
  - Approx 8,200 lineal feet of public sewer per basin
  - Meter basin for 9 week period every 3 years
  - Utilize portable Marsh-McBirney Flo-Totes for sewers
  - Install magnetic flow meters at pumping stations

Downers Grove Sanitary District Current Sewer Rehabilitation Policy

- Implement new sewer rehabilitation policy
  - Establish criteria for prioritizing sewer rehab projects:
    - Road Construction projects – review sewer condition and make repairs before road work
    - Maintenance projects – identify trouble spots in the sewer system
    - I/I reduction projects – Target Rehab basin

Downers Grove Sanitary District Sewer Rehab Policy – I/I Reduction

- Select Target Rehabilitation Basin
  - Develop Criteria / Scoring System based on:
    - Frequency of SSOs
    - Frequency of Basement Backups
    - Flow Monitoring Data
    - System Age

Downers Grove Sanitary District Target I/I Rehabilitation Basin

- Select I-H-9 Flow Basin
  - 189 Building connections
  - Approx. 8,300 LF of sewer and 32 manholes
- Flow Data
  - 60 gpm ADF to 1,200 gpm peak flow
- Preliminary SSES work and results
  - Flood testing
  - Smoke testing
  - Small amount of I/I identified

Downers Grove Sanitary District Target I/I Rehabilitation Basin

- Develop new rehab approach
- Private property inspections
  - Illegal connections
  - Flood test and building service video inspection
- Complete system rehabilitation
  - Line mains and air test
  - Grout and replace manholes
  - Line services and air test
  - Eliminate private property I/I sources

Downers Grove Sanitary District
Target I/I Rehab Basin – Service Lining

- Selection of service rehab process
  - Non-leaking connection at main
  - Minimize disruption
  - Ability to air test
  - Rehab from main to transition at the building
- Bidding specifics
  - Grouping of services reduces prices
  - Coordination with Excavation contractor

Downers Grove Sanitary District
Target I/I Rehab Basin – Service Lining

- Awarded to Performance Pipelining (T-liner)
- Contract Renewal
  - 5 year renewal period
  - Adjust unit prices based on CPI
  - Provides incentive for Contractor to satisfy and partner with DGSD

Downers Grove Sanitary District Target I/I Rehab and BSSRAP

- Current Status of Target Basin I/I Rehab
  - Main lining and MH rehab completed
  - Service lining began fall 2004 – 14 services were lined
  - Private Property work to begin in fall 2005
- What is BSSRAP and how did it develop
  - Building Sanitary Service Repair Assistance Program
  - Developed from focus on service rehab

Downers Grove Sanitary District BSSRAP – Program Development

- Studied for one year
- Survey sent to 20,000 building owners
- Received 5,000 completed surveys
- Prepared 231 page summary of results
- Majority of surveys favored the program
- Developed estimates of annual program costs

Downers Grove Sanitary District BSSRAP - Procure sewer contractor

- Baxter & Woodman and DGSD prepare bidding documents
  - Scope of work includes
    - Outside cleanouts
    - Point repairs
    - Total service replacement
    - Air testing
  - Estimated quantities based on repair records and survey results

Downers Grove Sanitary District BSSRAP - Procure sewer contractor

- Contract Requirements
  - Work to be complete within 6 weeks of receiving work order
  - Emergency repairs to be started the next day
  - Contract Renewal
    - 5 year renewal period
    - Adjust unit prices based on CPI
    - Provides incentive for Contractor to satisfy and partner with DGSD

Downers Grove Sanitary District BSSRAP – Outline of Program

- Building Owner submits documentation of sewer problems
- DGSD televises sewer, inspects building and identifies defects
- DGSD determines needed repairs
- DGSD identifies I/I sources that must be removed

Downers Grove Sanitary District BSSRAP – Outline of Program

- Building Owner signs 2 agreements:
  - Program Compliance Agreement
  - Access Agreement
- Access agreement is recorded
- Building Owner pays for sewer rodding, if necessary ($265)
- DGSD Contractor completes repair within 6 weeks
- DGSD arranges for removal of I/I sources

Downers Grove Sanitary District BSSRAP Program Costs

- Program Costs very close to initial estimate
- Approximately $3 per month per account
- As of June 30, 2005, after three years -
  - 743 total repairs at 631 addresses
  - Represents 3% of connected buildings
  - Total construction cost of $1,707,233
- Feedback from owners has been extremely positive

Downers Grove Sanitary District Additional I/I Control: New Connections

- Install cleanout at transition (4” to 6”)
- Replace service pipe from cleanout to main
- Air test new service ($800 each)
- 473 services tested from 8/1/01 to 6/30/05
- Televise and provide video inspection
- Drawing with as-built measurements
- PVC pressure rated pipe
- Access agreement for future work

Downers Grove Sanitary District Overhead Sewer Program

- Program adopted August 1997
- 50% reimbursement up to $2,500, increased to $3,000 in 2005
- Removal of I/I sources at DGSD expense
- Status as of June 2005:
  - 74 buildings converted to overhead sewer
  - Total cost to DGSD $131,121
  - 0.4% of buildings connected to the system

Downers Grove Sanitary District
Public Sewer Blockage: Reimbursement Program

- Adopted April 1998
- DGSD reimburses costs associated with backup due to public sewer blockage
- Reimbursement up to $1,000, increased to $1,200 in 2005
- Backups resulting from high flows are not eligible
- Backups in the building service are not eligible
- Status as of June 2005:
  - 49 backup claims have been paid
  - Total cost of $34,332 including claims adjuster

Downers Grove Sanitary District Sewer System Rehabilitation Program

- Summary
  - No quick fix to I/I
  - Must view sewer system as a whole
  - Removal of private I/I is crucial
  - Ability to test sewer system for leaks
  - Encourage partnership with contractors
  - Sewer system data and record keeping

Contact Information

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Questions?

Q & A Session With Speakers

Wrap Up and Summary

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